duction in specificity or incidence will reduce the PVP and raise the ratio of FP to TP; a reduction in sensitivity will also reduce the PVP. Efforts to improve the sensitivity and specificity of the screening method can increase PVP, but as long as incidence is low, the ratio of FP to TP will be high. There is a reticence to evaluate syndromic surveillance systems, which may be warranted. If the system has never experienced a TP, quantitative evaluation results are known in advance. There are three alternatives: process evaluation, evaluation of qualitative attributes, and simulations. The first two fail to assess how well the system finds cases of the target disease. The third may evoke the "Texas sharpshooter" fallacy: drawing the circle on the barn after shooting the rifle. If syndromic surveillance has value in detection of extremely rare events, evaluation remains a challenge.

Use of Simulated Bioterrorist Attacks to Evaluate Syndromic Surveillance Systems Based on Multiple Data Sources

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Syndromic surveillance systems are useful not only for early detection, but also for rapid monitoring of the spread of the outbreak. Syndromic surveillance systems based on single data sources have limited sensitivity, specificity, and predictive value. The aims of the current study were (1) to evaluate the contribution of multiple data sources to early detection and monitoring of unusual infectious disease outbreaks, (2) to evaluate LEADERS (Lightweight Epidemiology Advanced Detection and Emergency Response System) as a tool for syndromic surveillance systems, and (3) to evaluate dynamic changes in patterns of disease resulting from a simulated bioterror attack. Retrospective data on visits to community clinics and emergency rooms and reported deaths were used to generate mean and threshold incidence curves. The LEADERS platform was used for collection, storage, and analyses of data from different sources. A simulated anthrax outbreak based on the Svredlovsk outbreak was superimposed on background morbidity. GIS and SaTScan software (National Cancer Institute) were used for cluster analysis and the temporal-spatial changes in the different data sources were compared. A theoretical model demonstrates the progression from visits to outpatient clinics to admissions to emergency rooms to deaths. We conclude that differential dynamic changes in morbidity and mortality from different data sources are a useful means of detecting and monitoring unusual infectious disease outbreaks. More advanced statistical models will improve the performance of the system for early detection. A secured, Web-based system for integrating multiple data sources such as LEADERS will greatly facilitate the operation of the surveillance system.

Implementing the Centers for Disease Control and Prevention's Early Aberration Reporting System (EARS): a Frontline Perspective From the Knox County, Tennessee, Health Department

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